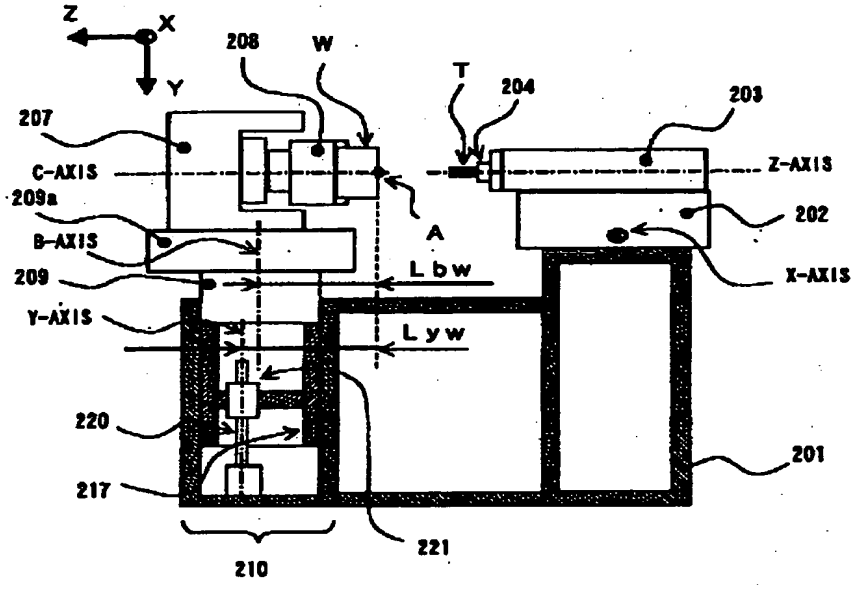


FIG. 1A

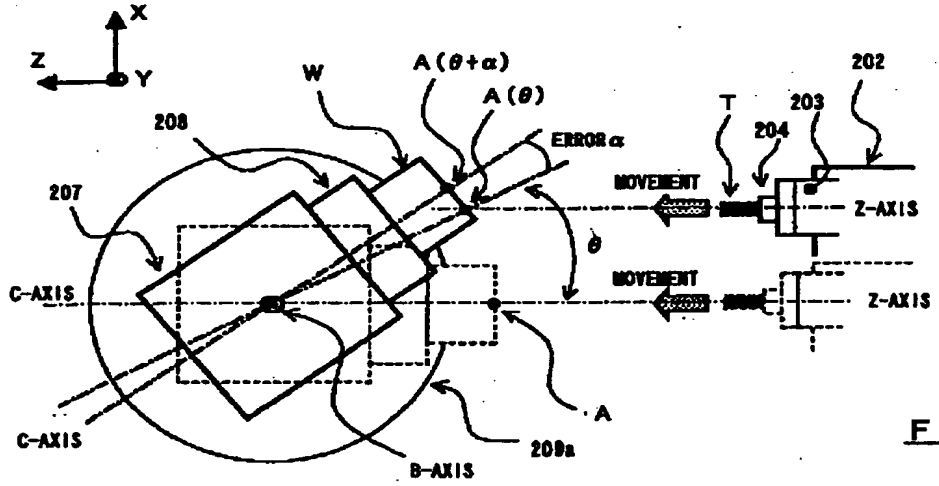


FIG. 1B

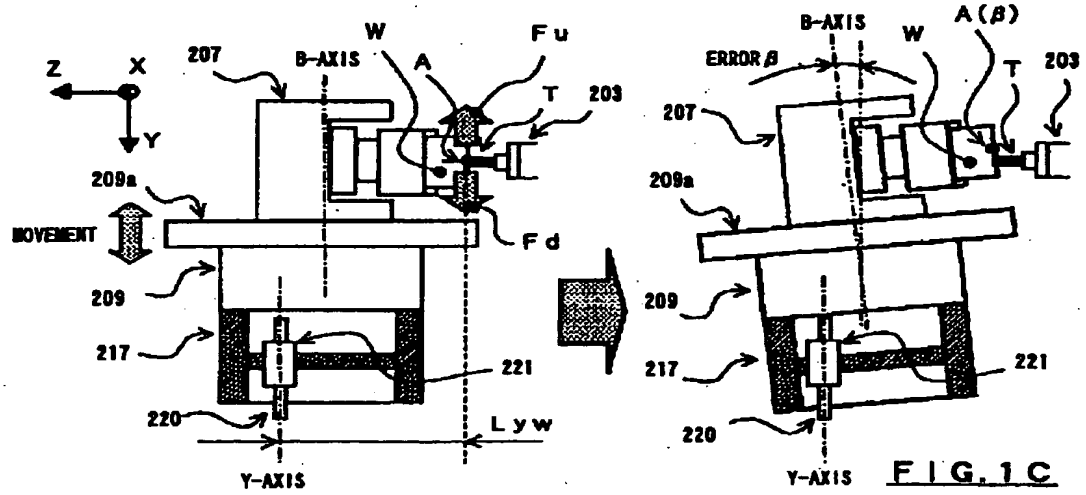


FIG. 1C

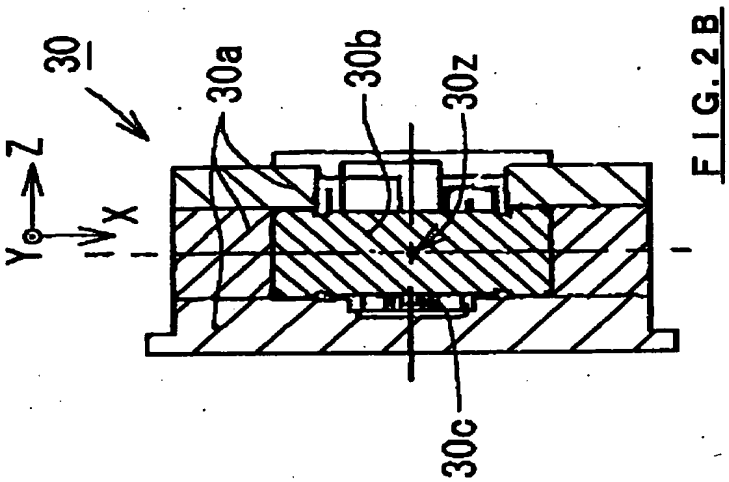


FIG. 2B

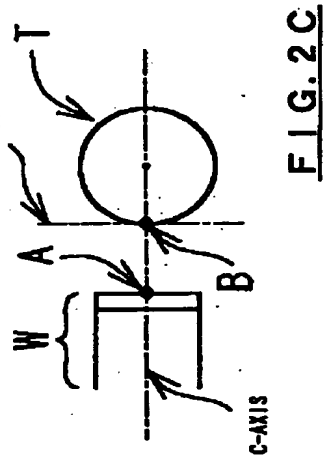


FIG. 2C

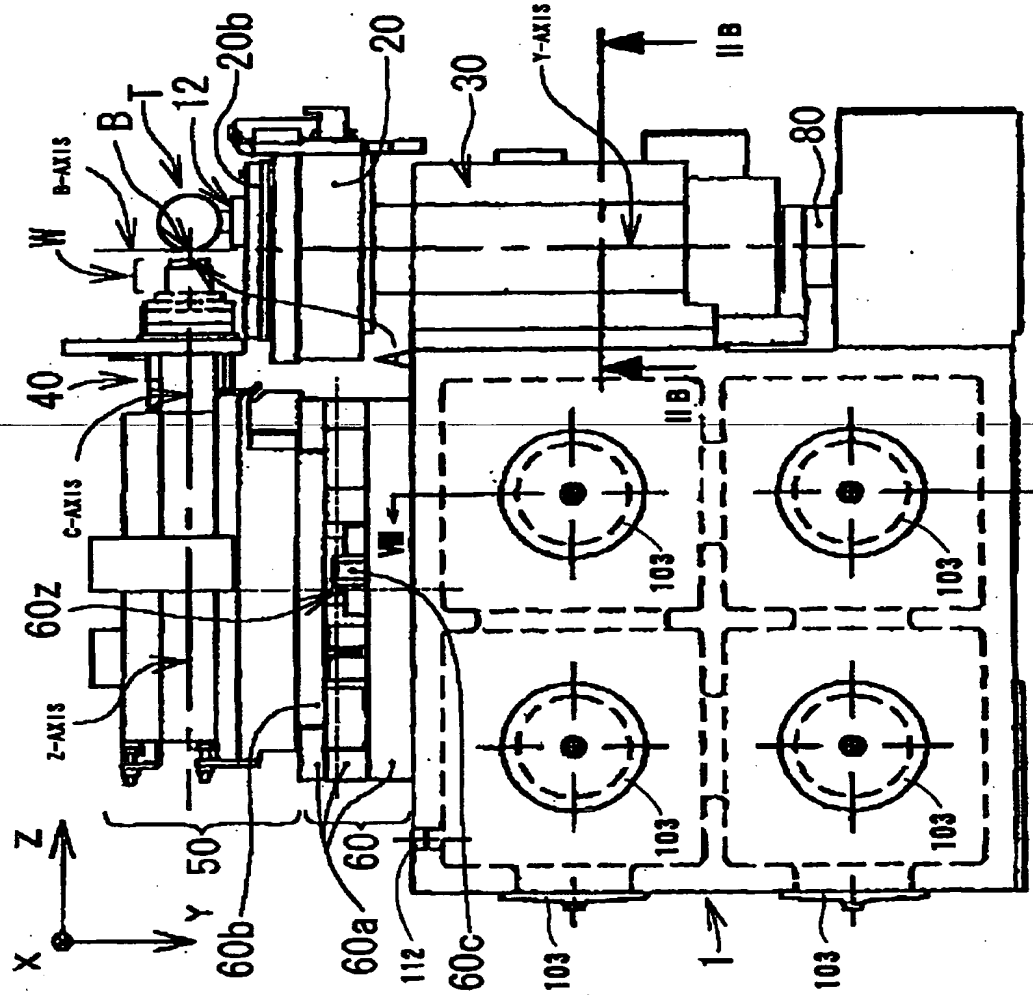


FIG. 2A

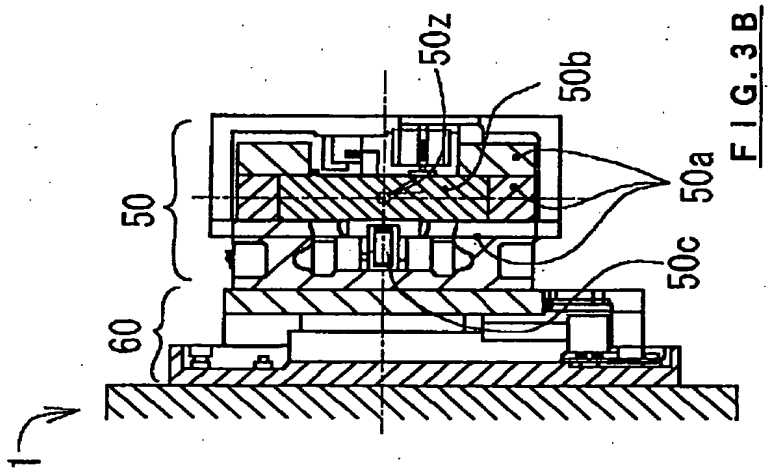


FIG. 3B

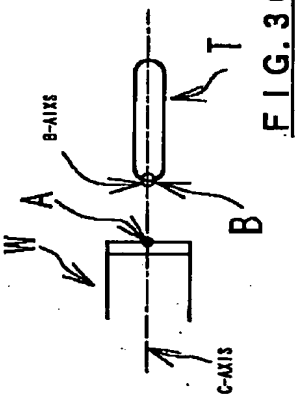


FIG. 3C

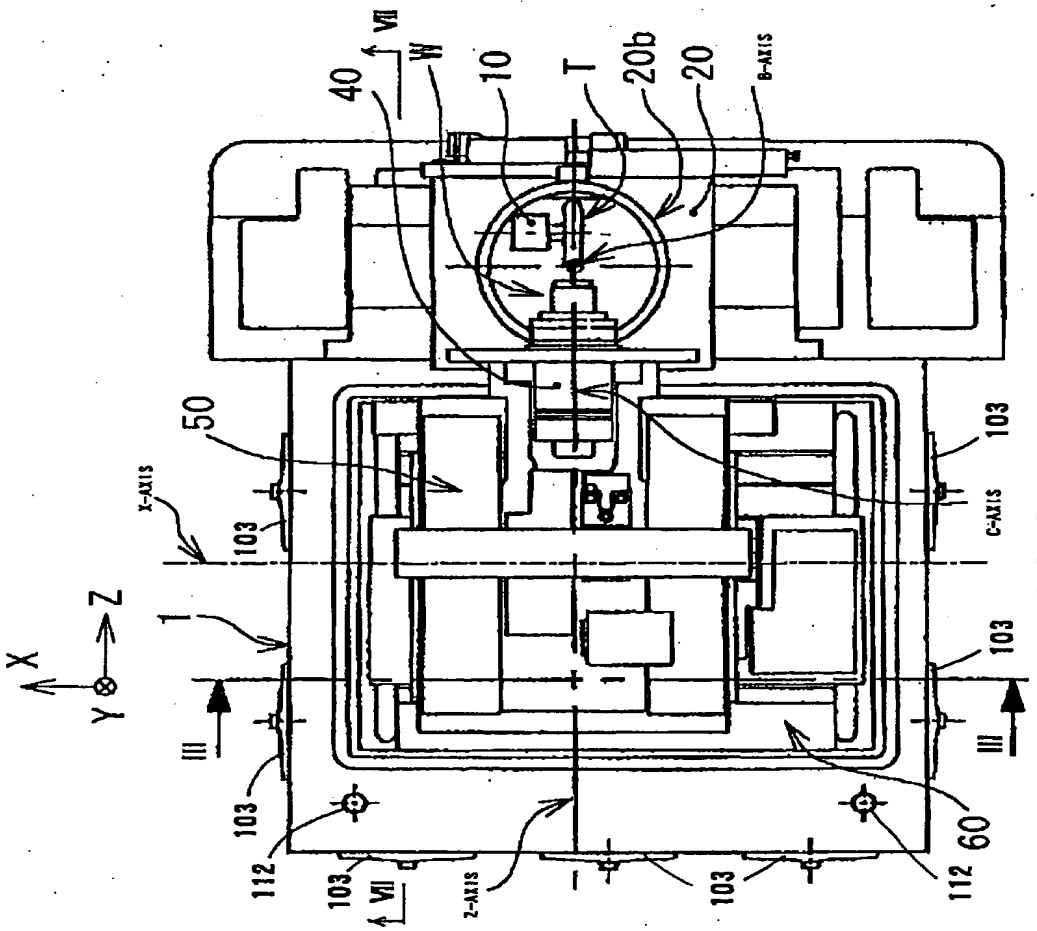


FIG. 3A

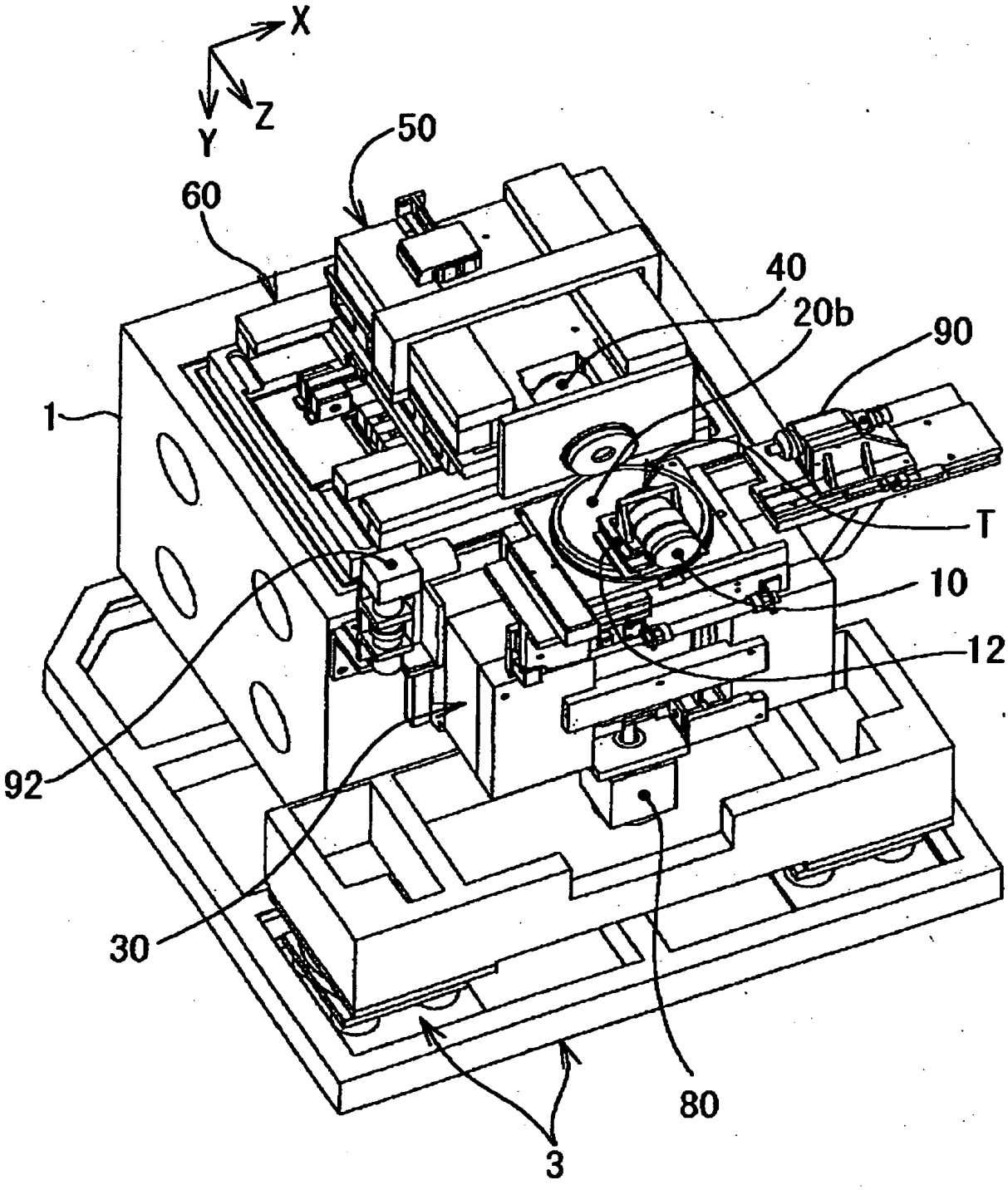


FIG. 4

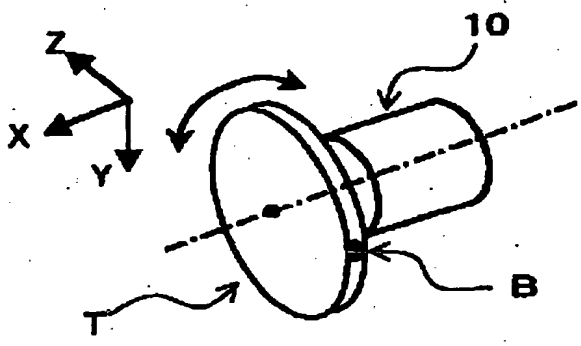


FIG. 5A

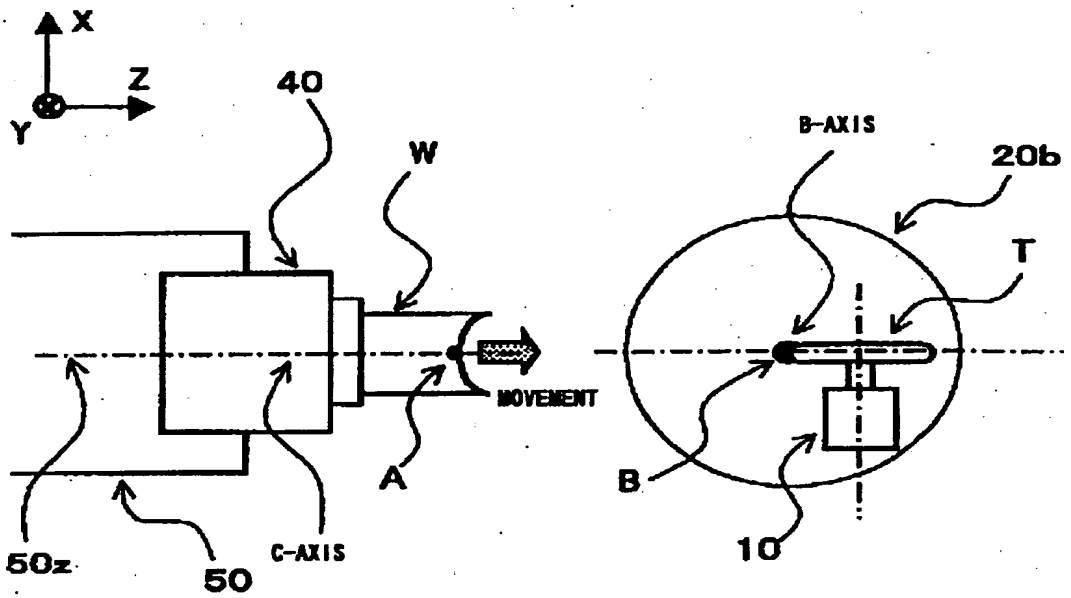


FIG. 5B

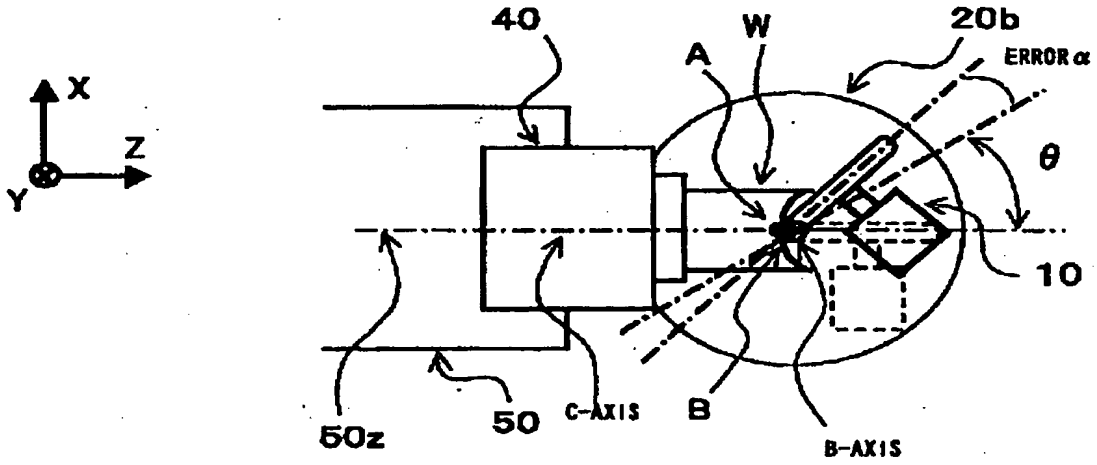


FIG. 5C

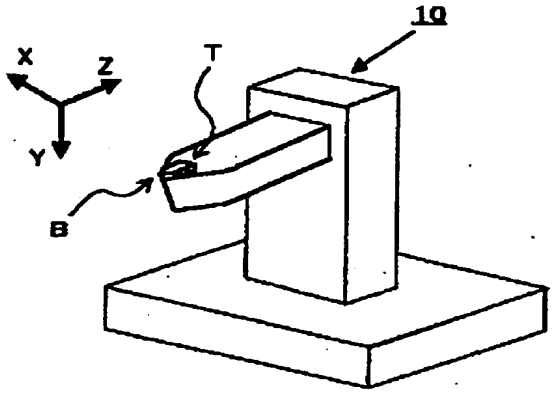


FIG. 6 A

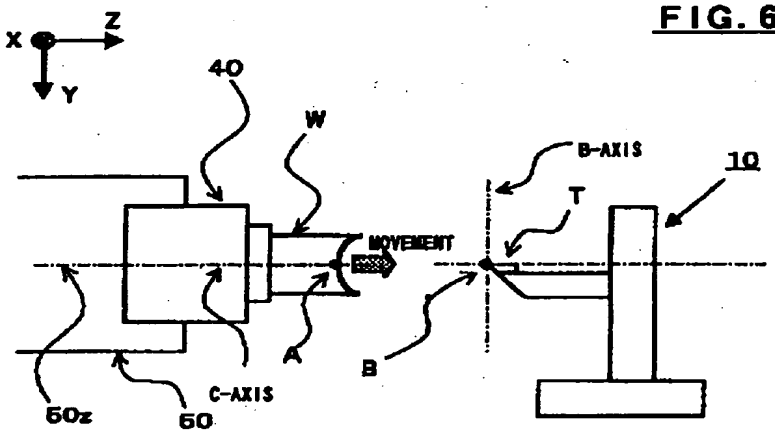


FIG. 6 B

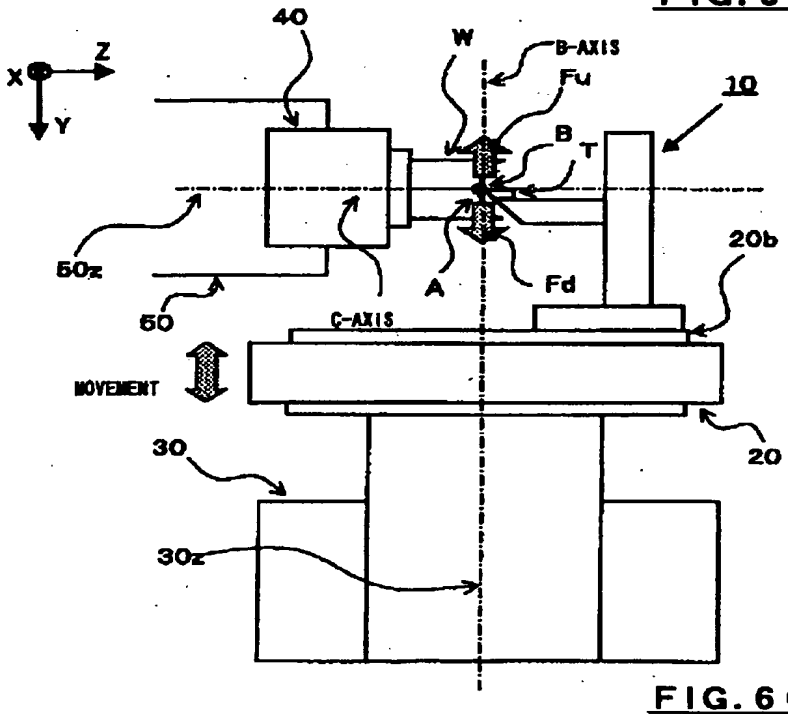


FIG. 6 C

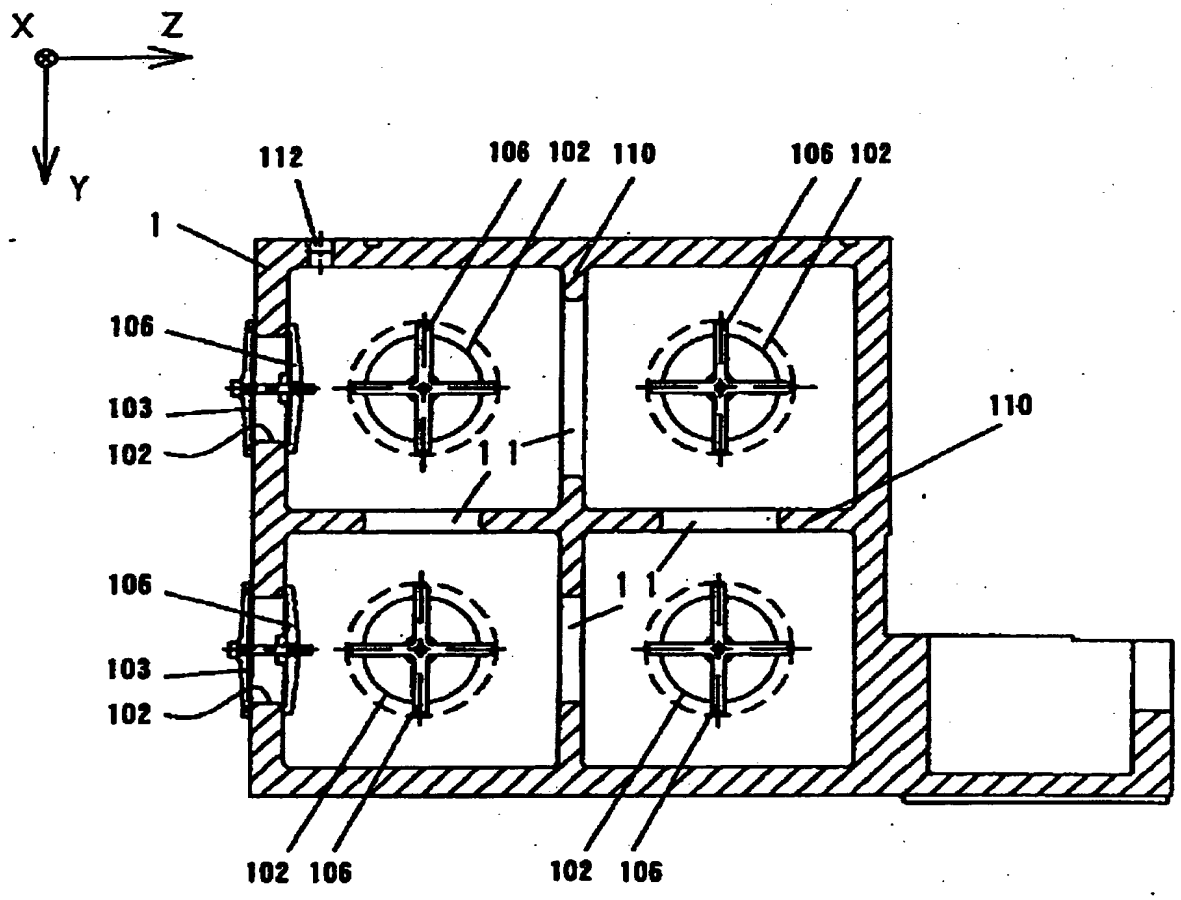

X
Z
Y
112
106
102
110
106
102
1
106
103
102
1
1
110
106
103
102
1
1
102
106
102
106

FIG. 7

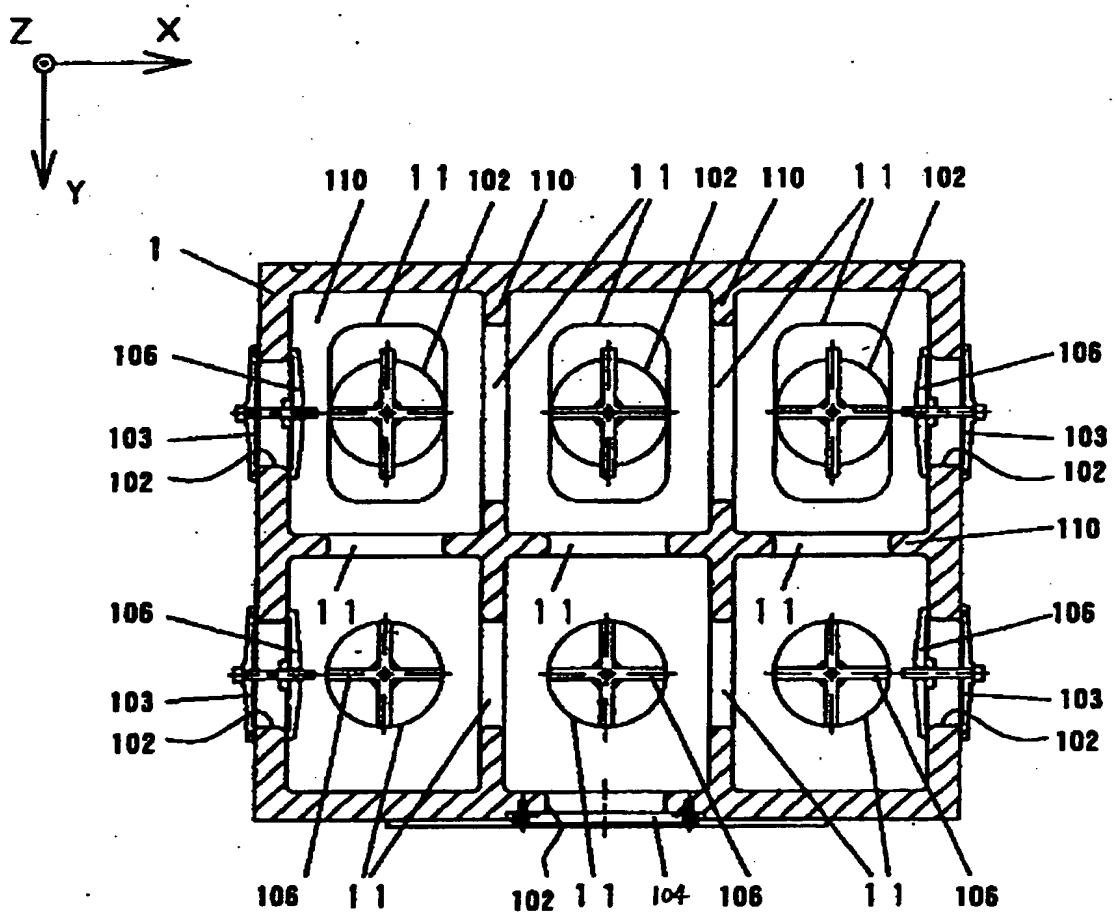


FIG. 8

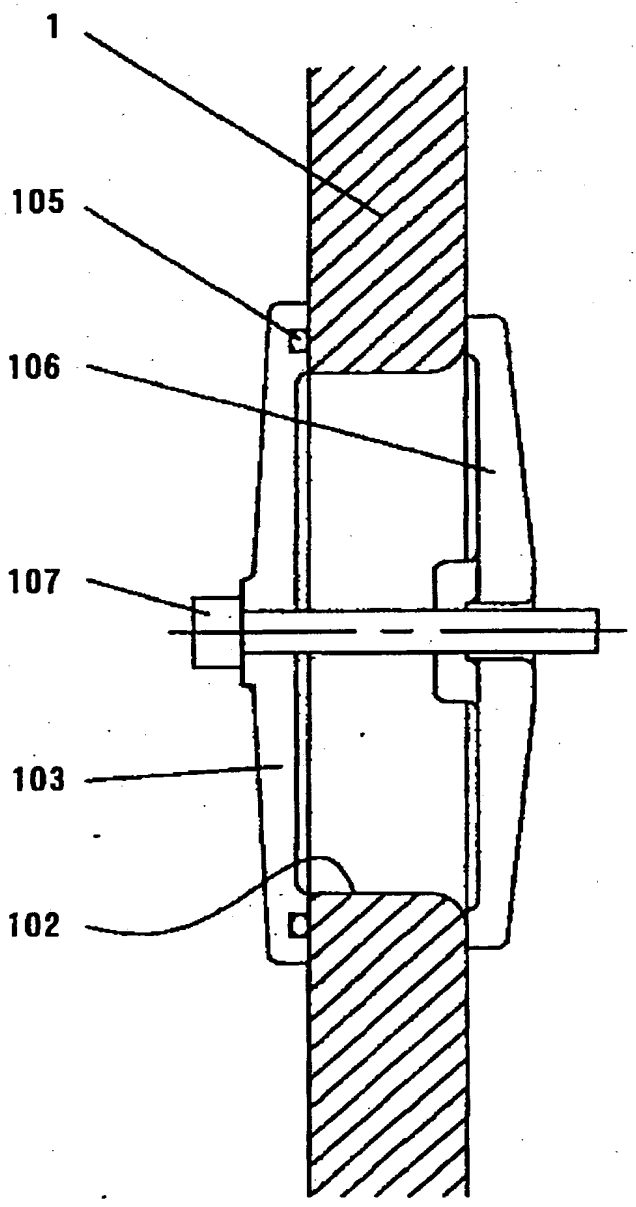


FIG. 9

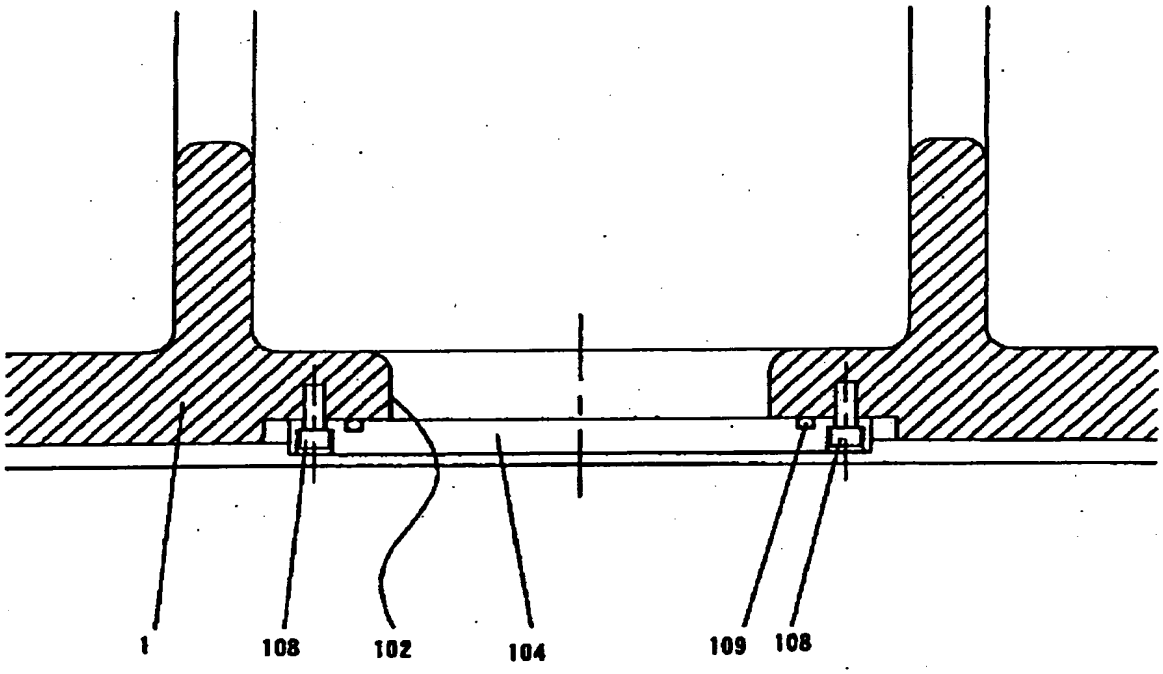


FIG. 10

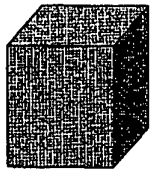
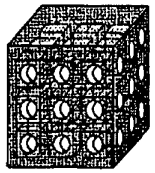
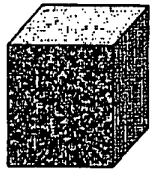
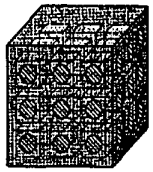
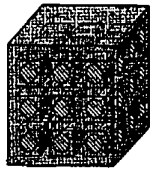
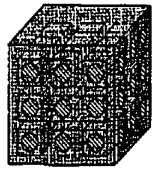
	CAST IRON (1m×1m×1m) 	A+HOLLOW, RIB-REINFORCED STRUCTURE 	GRANITE (1m×1m×1m) 	B + COVERS 	B0 + MINERAL OIL 	B0 + WATER 
TYPE	A	B	C	B0	B1	B2
MATERIAL	GRAY CAST IRON	GRAY CAST IRON	GRANITE	GRAY CAST IRON	GRAY CAST IRON	GRAY CAST IRON
STRUCTURE	SOLID	RIB THICKNESS : 50mm, 27CHAMBERS	SOLID	RIB THICKNESS : 50mm, 27CHAMBERS	B0 + MINERAL OIL	B0 + WATER
VOLUME V (m^3)	1.00	0.30	1.00	0.30	1.00	1.00
SURFACE AREA S (m^2)	6.00	9.27	6.00	6.00	6.00	6.00
S / V (m^{-1})	6.0	30.9	6.0	20.0	6.0	6.0
WEIGHT (kg)	7320	2196	2650	2196	2763	2896
HEAT CAPACITY ($kJ \cdot K^{-1}$)	3880	1164	2173	1164	2230	4104

FIG. 11

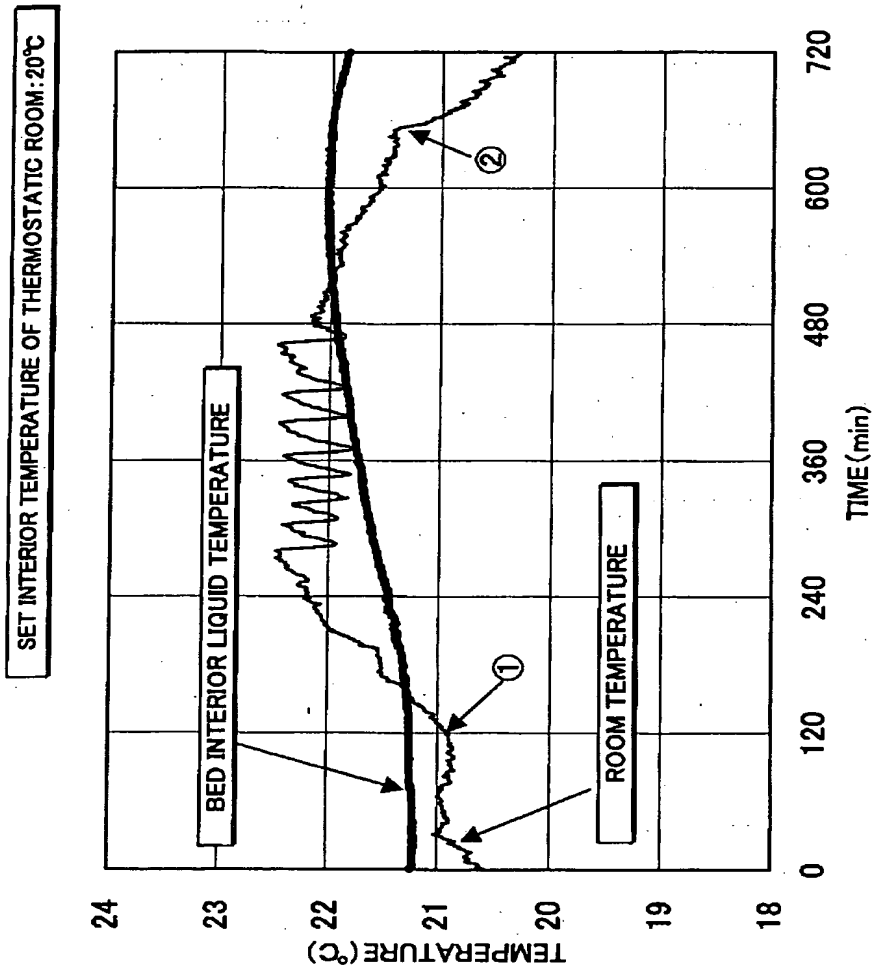

SET INTERIOR TEMPERATURE OF THERMOSTATIC ROOM: 20℃
BED INTERIOR LIQUID TEMPERATURE
ROOM TEMPERATURE
①
②
TEMPERATURE (℃)
24
23
22
21
20
19
18
0
120
240
360
480
600
720
TIME (min)

FIG. 12

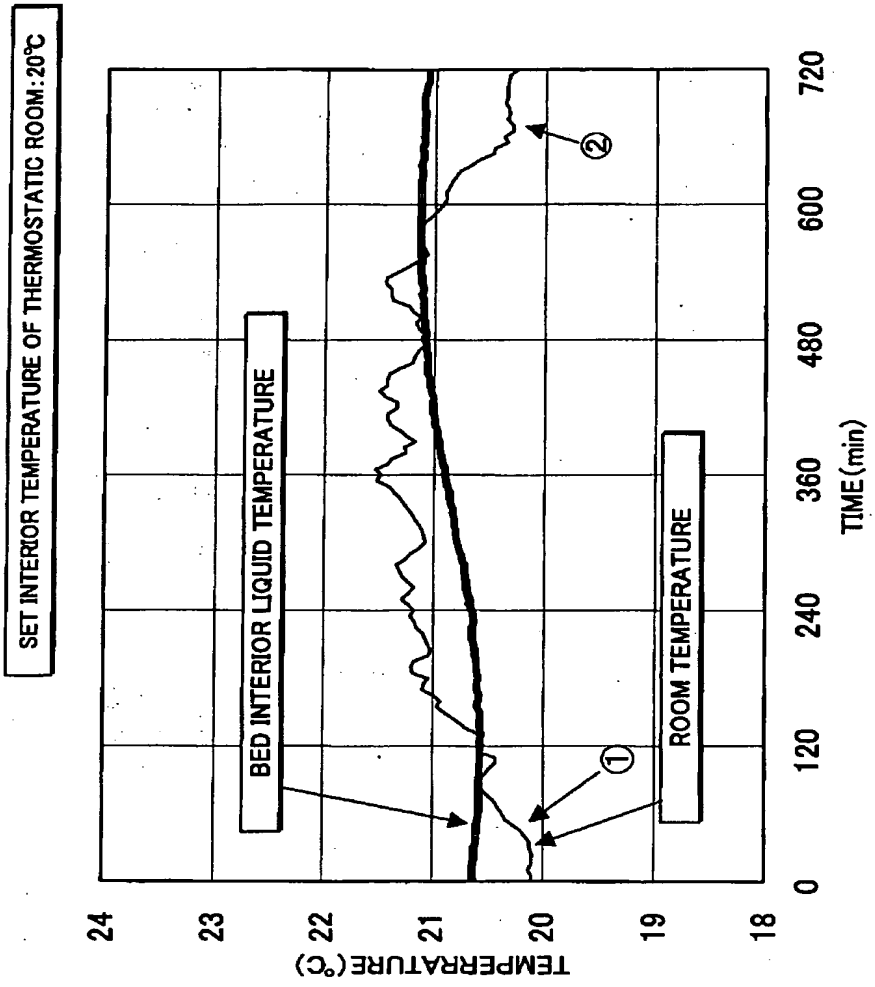

SET INTERIOR TEMPERATURE OF THERMOSTATIC ROOM: 20℃
BED INTERIOR LIQUID TEMPERATURE
ROOM TEMPERATURE
①
②
TEMPERATURE (°C)
24
23
22
21
20
19
18
0
120
240
360
480
600
720
TIME (min)

FIG. 13

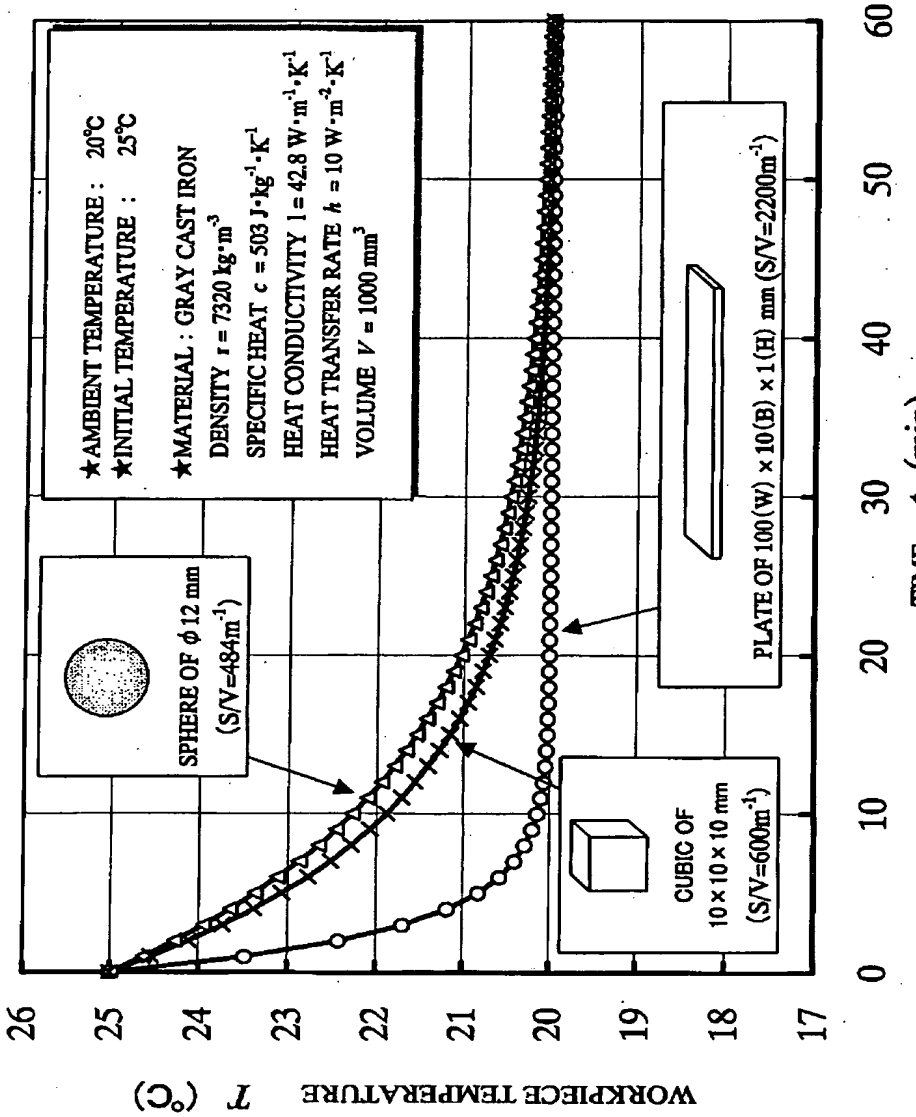

★AMBIENT TEMPERATURE : 20℃
★INITIAL TEMPERATURE : 25℃
★MATERIAL : GRAY CAST IRON
DENSITY r = 7320 kg·m-3
SPECIFIC HEAT c = 503 J·kg-1·K-1
HEAT CONDUCTIVITY l = 42.8 W·m-1·K-1
HEAT TRANSFER RATE h = 10 W·m-2·K-1
VOLUME V = 1000 mm3
SPHERE OF ϕ 12 mm
(S/V=484m-1)
PLATE OF 100(W) × 10(B) × 1(H) mm (S/V=2200m-1)
CUBIC OF
10 × 10 × 10 mm
(S/V=600m-1)
WORKPIECE TEMPERATURE T (℃)
TIME t (min)
26
25
24
23
22
21
20
19
18
17
0
10
20
30
40
50
60

FIG. 14